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Date: August 24, 2001

By: 

Kay L. Gaviglio

PATENT
Docket No. GC525-2D1

In Re Application:)
Jones et al.)
) Group Art Unit: Not Assigned
Serial No.: Not Assigned)
) Examiner: Not Assigned
Filed: August 24, 2001)
)
For: CHEMICALLY MODIFIED MUTANT)
ENZYMES AND METHODS FOR)
PRODUCING THEM, AND SCREENING)
THEM FOR AMIDASE AND/OR)
ESTERASE ACTIVITY)

Information Disclosure Statement

Commissioner for Patents
Washington, DC 20231

Sir:

Applicants submit herewith patents, publications or other information (listed on the attached Form PTO-1449 and attached thereto) of which they are aware, that they believe may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR §1.56.

This Information Disclosure Statement:

- (a) accompanies the new patent application submitted herewith. 37 CFR §1.97(a).
- (b) is filed within three months after the filing date of the application or within three months after the date of entry into the national stage of a PCT application as set forth in 37 CFR §1.491.
- (c) as far as is known to the undersigned, is filed before the mailing date of a first Office Action on the merits.
- (d) is filed after the first Office Action and more than three months after the application filing date or PCT national stage date of entry filing but, as far

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as is known to the undersigned, prior to the mailing date of either a final rejection or a notice of allowance, whichever occurs first, and is accompanied by either the fee (\$180.00) set forth in 37 CFR §1.17(p) or a certification as specified in 37 CFR §1.97(e), as checked below. Authorization to charge Deposit Account No. 07-1048 in the amount of \$180.00 to cover the cost of this Information Disclosure Statement is provided in the Transmittal Letter submitted herewith in duplicate.

(e) is filed after the mailing date of either a final rejection or a notice of allowance, whichever occurred first, and is accompanied by authorization (in the Transmittal Letter submitted herewith in duplicate) to charge Deposit Account No. 07-1048 the fee (\$180.00) set forth in 37 CFR §1.17(l)(1) and a certification as specified in 37 CFR §1.97(e), as checked below. **This document is to be considered as a petition requesting consideration of the Supplemental Information Disclosure Statement.**

[If either of boxes (d) or (e) is checked above, the following "certification" under 37 CFR §1.97(e) may need to be completed.] The undersigned certifies that:

- Each item of information contained in the Information Disclosure Statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.
- No item of information contained in this Information Disclosure Statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned after making reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

These patents and publications were previously cited by or submitted to the Office in a prior application, Serial No. 09/234,956 filed July 15, 1999, and relied upon in this application for an earlier filing date under 35 USC 120.

A concise explanation of relevance of the items listed on PTO-1449 is:

- not given
- given for each listed item
- given for only non-English language listed item(s)
- in the form of an English language copy of a Search Report from a foreign patent office, issued in a counterpart application, which refers to the relevant portions of the references.

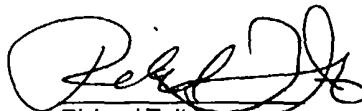
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The Examiner is reminded that a "concise explanation of the relevance" of the submitted prior art "may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention." MPEP §609.

While the information and references disclosed in this Information Disclosure Statement may be "material" pursuant to 37 CFR §1.56, it is not intended to constitute an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

In accordance with 37 CFR §1.97(b), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 CFR §1.56(a) exists. It is submitted that the Information Disclosure Statement is in compliance with 37 CFR §1.98 and MPEP §609 and the Examiner is respectfully requested to consider the listed references.

Respectfully submitted,



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Date: August 24, 2001

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTN: DOCKET NO.	SERIAL NO.
		200649/2030 (GCS25-2)	09/234,956
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		APPLICANT	PTD
(use several sheets if necessary)		Jones et al.	1046 U S 5 938801
(PTO-1449)		FILING DATE	GROUP ART UNIT
		January 21, 1999	1633

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
RH	1	5,208,158	05/04/1993	Bech et al.	435	219	
	2	5,244,791	09/14/1993	Estell		68.1	
	3	5,316,935	05/31/1994	Arnold et al.		222	
	4	5,316,941	05/31/1994	Estell et al.		751.3	
	5	5,403,737	04/04/1995	Abrahmsen et al.		252.3	
PV	6	5,629,173	05/13/1997	Abrahmsen et al.		68.1	

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION IF APPROPRIATE
RH	7	WO 91/16423		PCT	—	—	
	8	WO 96/27671		PCT	—	—	
RH	9	EP 0 328 229 A1		Europe	—	—	

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

RH	10	Plettner et al., "A Combinatorial Approach to Chemical Modification of Subtilisin <i>Bacillus licheniformis</i> ," <i>Bioorganic & Medicinal Chemistry Letters</i> , 8:2291-2296 (1998)
	11	DeSantis et al., "Chemical Modifications at a Single Site Can Induce Significant Shifts in the pH Profiles of a Serine Protease," <i>J. Am Chem. Soc.</i> , 120:8582-8586 (1998)
	12	DeSantis et al., "Site-Directed Mutagenesis Combined with Chemical Modification as a Strategy for Altering the Specificity of the S1 and S1' Pockets of Subtilisin <i>Bacillus licheniformis</i> ," <i>Biochemistry</i> , 37: 5968-5973 (1998)
	13	Berglund et al., "Altering the Specificity of Subtilisin <i>B. licheniformis</i> by Combining Site-Directed Mutagenesis and Chemical Modification," <i>Bioorganic & Medicinal Chemistry Letters</i> , 6:2507-2512 (1996)
	14	Bech et al., "Chemical Modification of a Cysteinyl Residue Introduced in the Binding Site of Carboxypeptidase Y by Site-Directed Mutagenesis," <i>Carlsberg Res. Commun.</i> , 53:381-393 (1988)
RH	15	Wynn et al., "Chemical Modification of Protein Thiol: Formation of Mixed Disulfides," <i>Methods in Enzymology</i> , 251:331-356 (1995)
EXAMINER		DATE CONSIDERED
<i>[Signature]</i>		11/24/98
EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 6.9; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		APPL'D. DOCKET NO. 200649/2030 (GCS25-2)	SERIAL NO. 09/234,956
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		APPLICANT Jones et al.	
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U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION IF APPROPRIATE

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

RV	16	Bonneau et al., "Alteration of the Specificity of Subtilisin BPN' by Site Directed Mutagenesis in Its S ₁ and S _{1'} Binding Sites," <i>J. Am. Chem. Soc.</i> , 113:1026-1030 (1991)
/	17	Gloss et al., "Examining the Structural and Chemical Flexibility of the Active Site Base, Lyz-258, of <i>Escherichia coli</i> Aspartate Aminotransferase by Replacement with Unnatural Amino Acids," <i>Biochemistry</i> , 34:12323-12332 (1995)
	18	Wynn et al., "Mobile Unnatural Amino Acid Side Chains in the Core of Staphylococcal Nuclease," <i>Protein Science</i> , 5:1026-1031 (1996)
	19	Berglund et al., "Chemical Modification of Cysteine Mutants of Subtilisin <i>Bacillus Lentus</i> Can Create Better Catalysts Than The Wild-Type Enzyme," <i>J. Am. Chem. Soc.</i> , 119:5265-5266 (1997)
	20	Gron et al., "A Highly Active and Oxidation-Resistant Subtilisin-Like Enzyme Produced by a Combination of Site-Directed Mutagenesis and Chemical Modification," <i>Eur. J. Biochem.</i> , 194:897-901 (1990)
	21	Bech et al., "Significance of Hydrophobic S ₄ -P ₄ Interactions in Subtilisin 309 from <i>Bacillus Lentus</i> ," <i>Biochemistry</i> , 32:2847-2852 (1993)
	22	Wynn et al., "Unnatural Amino Acid Packing Mutants of <i>Escherichia Coli</i> Thioredoxin Produced by Combined Mutagenesis/Chemical Modification Techniques," <i>Protein Science</i> , 2:395-403 (1993)
	23	Wynn et al., "Comparison of Straight Chain and Cyclic Unnatural Amino Acids Embedded in the Core of Staphylococcal Nuclease," <i>Protein Science</i> , 6:1621-1626 (1997)
RK	24	Kawase et al., "Effect of Chemical Modification of Tyrosine Residues on Activities of Bacterial Lipase," <i>Journal of Fermentation and Bioengineering</i> , 72:317-319 (1991)
EXAMINER		DATE CONSIDERED 11/24/03

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U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		A. DOCKET NO. 200649/2030 (GCS25-2)	SERIAL NO. 09/234,956
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FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION IF APPROPRIATE

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

RK	25	Rain et al., "Activation of <i>Sulfolobus Solfataricus</i> Alcohol Dehydrogenase by Modification of Cysteine Residue 38 with Iodoacetic Acid," <i>Biochemistry</i> , 35:638-647 (1996)
	26	Ramachandran et al., "Stabilization of Barstar by Chemical Modification of the Buried Cysteines," <i>Biochemistry</i> , 35:8776-8785 (1996)
	27	Davies et al., "A Semisynthetic Metalloenzyme Based on a Protein Cavity That Catalyzes the Enantioselective Hydrolysis of Ester and Amide Substrates," <i>J. Am. Chem. Soc.</i> , 119:11643-11652 (1997)
	28	Polgar et al., "A New Enzyme Containing a Synthetically Formed Active Site. Thiol-Subtilisin," <i>Journal of American Chemical Society</i> , 88:3153-3154 (1966)
	29	Stewart et al., "Catalytic Oxidation of Dithiols by a Semisynthetic Enzyme," <i>J. Am. Chem. Soc.</i> , 108:3480-3483 (1986)
	30	Radziejewski et al., "Catalysis of N-Alkyl-1,4-Dihydronicotinamide Oxidation by a Flavopapain: Rapid Reaction in All Catalytic Steps," <i>J. Am. Chem. Soc.</i> , 107:3352-3354 (1985)
	31	Hilvert et al., "A Highly Active Thermophilic Semisynthetic Flavoenzyme," <i>J. Am. Chem. Soc.</i> , 110:682-689 (1988)
	32	Hilvert et al., "New Semisynthetic Flavoenzymes Based on a Tetrameric Protein Template, Glyceraldehyde-3-Phosphate Dehydrogenase," <i>J. Am. Chem. Soc.</i> , 107:5805-5806 (1985)
	33	Rokita et al., "Synthesis and Characterization of a New Semisynthetic Enzyme, Flavolysozyme," <i>J. Am. Chem. Soc.</i> , 108:4984-4987 (1986)
	34	Kokubo et al., "Flavohemoglobin: A Semisynthetic Hydroxylase Acting in the Absence of Reductase," <i>J. Am. Chem. Soc.</i> , 109:606-607 (1987)
RV	35	Suckling et al., "Carbon-Carbon Bond Formation Mediated by Papain Chemically Modified by Thiazolium Salts," <i>Inorganic & Medicinal Chemistry Letters</i> , 3:531-534 (1993)
EXAMINER		DATE CONSIDERED 11/24/03

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U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION IF APPROPRIATE

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

<i>PV</i>		36	Di Bello, "Total Synthesis of Proteins by Chemical Methods: The Horse Heart Cytochrome C Example," <u>Gazzetta Chimica Italiana</u> , 126:189-197 (1996)				
		37	O'Connor et al., "Probing an Acyl Enzyme of Selenosubtilisin by Raman Spectroscopy," <u>J. Am. Chem. Soc.</u> , 118: 239-240 (1996)				
		38	Peterson et al., "Nonessential Active Site Residues Modulate Selenosubtilisin's Kinetic Mechanism," <u>Biochemistry</u> , 34: 6616-6620 (1995)				
		39	Bell et al., "Kinetic Studies on the Peroxidase Activity of Selenosubtilisin," <u>Biochemistry</u> , 32:3754-3762 (1993)				
		40	Peterson et al., "Selenosubtilisin's Peroxidase Activity Does Not Require an Intact Oxyanion Hole," <u>Tetrahedron</u> , 53:12311-12317 (1997)				
		41	Wu et al., "Conversion of a Protease into an Acyl Transferase: Selenosubtilisin," <u>J. Am. Chem. Soc.</u> , 111:4514-4515 (1989)				
		42	House et al., " ¹ H NMR Spectroscopic Studies of Selenosubtilisin," <u>Biochemistry</u> , 32:3468-3473 (1993)				
		43	Valenzuela et al., "Kinetic Properties of Succinylated and Ethylenediamine-Amidated δ -Chymotrypsins," <u>Biochim. Biophys. Acta</u> , 250:538-548 (1971)				
		44	Siddiqui et al., "Arthrobacter D-Xylose Isomerase: Chemical Modification of Carboxy Groups and Protein Engineering Of pH Optimum," <u>Biochem. J.</u> , 295:685-691 (1993)				
		45	Kuang et al., "Enantioselective Reductive Amination of α -Keto Acids to α -Amino Acids by a Pyridoxamine Cofactor in A Protein Cavity," <u>J. Am. Chem. Soc.</u> , 118:10702-10706 (1996)				
<i>PV</i>		46	West et al., "Enzymes as Synthetic Catalysts: Mechanistic and Active-Site Considerations of Natural and Modified Chymotrypsin," <u>J. Am. Chem. Soc.</u> , 112:5313-5320 (1990)				
		EXAMINER	<i>R. L. Smith</i>			DATE CONSIDERED	<i>11/29/03</i>

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U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION IF APPROPRIATE

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

RK	47	White et al., "Sequential Site-Directed Mutagenesis and Chemical Modification to Convert the Active Site Arginine 292 Of Aspartate Aminotransferase to Homoarginine," <u>Journal of the American Chemical Society</u> , 114:292-293 (1992)
		Engler et al., "Critical Functional Requirement for the Guanidinium Group of the Arginine 41 Side Chain of Human Epidermal Growth Factor as Revealed by Mutagenic Inactivation and Chemical Reactivation," <u>The Journal of Biological Chemistry</u> , 267:2274-2281 (1992)
	49	Planas et al., "Reengineering the Catalytic Lysine of Aspartate Aminotransferase by Chemical Elaboration of a Genetically Introduced Cysteine," <u>Biochemistry</u> , 30:8268-8276 (1991)
		Smith et al., "An Engineered Change in Substrate Specificity of Ribulosebisphosphate Carboxylase/Oxygenase," <u>The Journal of Biological Chemistry</u> , 265:1243-1245 (1990)
	51	Smith et al., "Subtle Alteration of the Active Site of Ribulose Bisphosphate Carboxylase/Oxygenase by Concerted Site-Directed Mutagenesis and Chemical Modification," <u>Biochemical and Biophysical Research Communications</u> , 152: 579-584 (1988)
		Smith et al., "Restoration of Activity to Catalytically Deficient Mutants of Ribulosebisphosphate Carboxylase/Oxygenase by Aminoethylation," <u>The Journal of Biological Chemistry</u> , 263:4921-4925 (1988)
	53	Kanaya et al., "Role of Cysteine Residues in Ribonuclease H from <i>Escherichia coli</i> ," <u>Biochem. J.</u> , 271:59-66 (1990)
		Xu et al., "Amino Acids Lining the Channel of the γ -Am inobutyric Acid Type A Receptor Identified by Cysteine Substitution," <u>The Journal of Biological Chemistry</u> , 268:21505-21508 (1993)
RK	55	Svensson et al., "Mapping the Folding Intermediate of Human Carbonic Anhydrase II. Probing Substructure by Chemical Reactivity and Spin and Fluorescence Labeling of Engineered Cysteine Residues," <u>Biochemistry</u> , 34: 8606-8620 (1995)
EXAMINER		DATE CONSIDERED 1/12/98

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U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION IF APPROPRIATE

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

RV	56	Akabas et al., "Acetylcholine Receptor Channel Structure Probed in Cysteine-Substitution Mutants," <i>Science</i> , 258: 307-310 (1992)
1	57	Liu et al., "Site-Directed Fluorescence Labeling of P-Glycoprotein on Cysteine Residues in the Nucleotide Binding Domains," <i>Biochemistry</i> , 35:11865-11873 (1996)
	58	Frillingos et al., "Cysteine-Scanning Mutagenesis of Helix II and Flanking Hydrophilic Domains in the Lectose Permease of <i>Escherichia coli</i> ," <i>Biochemistry</i> , 36:269-273 (1997)
	59	Kirley, "Reduction and Fluorescent Labeling of Cyst(e)ine-Containing Proteins for Subsequent Structural Analyses," <i>Analytical Biochemistry</i> , 180:231-236 (1989)
	60	Buckwalter et al., "Improvement in the Solution Stability of Porcine Somatotropin by Chemical Modification of Cysteine Residues," <i>J. Agric. Food Chem.</i> , 40:356-362 (1992)
	61	Nishimura et al., "Reversible Modification of the Sulfhydryl Groups of <i>Escherichia coli</i> Succinic Thiolkinase with Methanethiolating Reagents, 5,5'-Dithio-bis(2-Nitrobenzoic Acid), p-Hydroxymercurobenzoate, and Ethymercurithiosalicylate," <i>Archives of Biochemistry and Biophysics</i> , 170:461-467 (1975)
	62	Lewis et al., "Determination of Interactive Thiol Ionizations in Bovine Serum Albumin, Glutathione, and Other Thiols by Potentiometric Difference Titration," <i>Biochemistry</i> , 19:6129-6137 (1980)
	63	Worku et al., "Identification of Histidyl and Cysteinyl Residues Essential for Catalysis by 5'-Nucleotidase," <i>FEBS Letters</i> , 167:235-240 (1984)
RV	64	Smith et al., "Chemical Modification of Active Site Residues in γ -Glutamyl Transpeptidase," <i>The Journal of Biological Chemistry</i> , 270:12476-12480 (1995)

EXAMINER

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<i>PK</i>		65	Smith et al., "Nonessentiality of the Active Sulphydryl Group of Rabbit Muscle Creatine Kinase," <i>The Journal of Biological Chemistry</i> , 249:3317-3318 (1974)
		66	Roberts et al., "Reactivity of Small Thiolate Anions and Cysteine-25 in Papain Toward Methyl Methanethiosulfonate," <i>Biochemistry</i> , 25:5595-5601 (1986)
		67	Pardo et al., "Cysteine 532 and Cysteine 545 Are the N-Ethylmaleimide-Reactive Residues of the <i>Neurospora</i> Plasma Membrane H ⁺ -ATPase," <i>The Journal of Biological Chemistry</i> , 264:9373-9379 (1989)
		68	Hempel et al., "Selective Chemical Modification of Human Liver Aldehyde Dehydrogenases E ₁ and E ₂ by Iodoacetamide," <i>The Journal of Biological Chemistry</i> , 256:10889-10896 (1981)
		69	Daly et al., "Formation of Mixed Disulfide Adducts at Cysteine-281 of the Lactose Repressor Protein Affects Operator And Inducer Binding Parameters," <i>Biochemistry</i> , 25:5468-5474 (1986)
		70	Bodwell et al., "Sulphydryl-Modifying Reagents Reversibly Inhibit Binding of Glucocorticoid-Receptor Complexes to DNA-Celulose," <i>Biochemistry</i> , 23:1392-1398 (1984)
		71	Alvear et al., "Inactivation of Chicken Liver Mevalonate 5-Diphosphate Decarboxylase by Sulphydryl-Directed Reagents: Evidence of a Functional Dithiol," <i>Biochimica et Biophysica Acta</i> , 994:7-11 (1989)
		72	Miller et al., "Peroxide Modification of Monoalkylated Glutathione Reductase," <i>The Journal of Biological Chemistry</i> , 266:19342-19360 (1991)
		73	Soper et al., "Effects of Substrates on the Selective Modification of the Cysteinyl Residues of D-Amino Acid Transaminase," <i>The Journal of Biological Chemistry</i> , 254:10901-10905 (1979)
<i>PA</i>		74	Stauffer et al., "Electrostatic Potential of the Acetylcholine Binding Sites in the Nicotinic Receptor Probed by Reactions Of Binding-Site Cysteines with Charged Methanethiosulfonates," <i>Biochemistry</i> , 33:6840-6849 (1994)
EXAMINER <i>Robert</i>			DATE CONSIDERED <i>1/24/03</i>
EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 6.9; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			

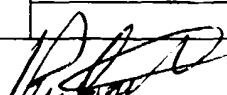
U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		A. DOCKET NO. 200649/2030 (GCS2S-2)	SERIAL NO. 09/234,956
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(PTO-1449)			

U.S. PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION IF APPROPRIATE

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

P1		75	Nakayama et al., "Chemical Modification of Cysteinyl, Lysyl and Histidyl Residues of Mouse Liver 17 β -Hydroxysteroid Dehydrogenase," <u>Biochimica et Biophysica Acta</u> , 1120:144-150 (1992)
		76	Huang et al., "Improving the Activity of Immobilized Subtilisin by Site-Specific Attachment to Surfaces," <u>Anal. Chem.</u> , 69:4601-4607 (1997)
		77	Brocklehurst, "Specific Covalent Modification of Thiols: Applications in the Study of Enzymes and Other Biomolecules," <u>Int. J. Biochem.</u> , 10:259-274 (1979)
		78	Bruice et al., "Novel Alkyl Alkanethiolosulfonate Sulfhydryl Reagents. Modification of Derivatives of L-Cysteine," <u>Journal of Protein Chemistry</u> , 1:47-58 (1982)
		79	Smith et al., "Simple Alkanethiol Groups for Temporary Blocking of Sulfhydryl Groups of Enzymes," <u>Biochemistry</u> , 14:766-771 (1975)
		80	Pojar, "Spectrophotometric Determination of Mercaptide Iota, an Activated Form of SH-Group in Thiol Enzymes," <u>FEBS Letters</u> , 38:187-190 (1974)
		81	Konigsberg, "Reduction of Disulfide Bonds in Proteins with Dithiothreitol," <u>Methods in Enzymology</u> , 25:185-188 (1972)
		82	Kenyon et al., "Novel Sulfhydryl Reagents," <u>Methods Enzymol.</u> , 47:407-430 (1977)
		83	Khuger et al., "Amino Group Reactions of the Sulfhydryl Reagent Methyl Methanesulfonylthioate. Inactivation of D-3-hydroxybutyrate Dehydrogenase and Reaction with Amines in Water," <u>Can. J. Biochem.</u> , 58:629-632 (1980)
P1		84	Kaiser, "Catalytic Activity of Enzymes Altered at Their Active Sites," <u>Angew. Chem. Int. Ed. Engl.</u> , 27:913-922 (1988)
EXAMINER			DATE CONSIDERED <u>11/24/03</u>
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